CropGuard, LLC.
45160 CR 23
Coshocton, OH 43812

U.S. Department of Transportation
Docket Operations
West Building Ground Floor
Room W12-140
1200 New Jersey Avenue, SE
Washington, DC 20590-0001

RE: Petition for Exemption to conduct agricultural operations using a unmanned aircraft of 55 pounds or more. The authority to grant such exemptions is granted in Title 49 U.S.C. 44807 and 14 C.F.R..

To Whom It May Concern:

CropGuard is a small agricultural services operation that performs liquid applications of fungicide, herbicide, insecticide and the occasional granule application of fertilizer. The organization focuses efforts solely in the United States and typically in the Ohio region. CropGuard will typically provide service in the rolling hills of eastern Ohio as well as the flat ground of Southern Ohio. These terrains should allow for VFR in almost all conditions. The operational territory for CropGuard will typically involve unpopulated areas.

CropGuard plans to utilize the DJI Agras T-30 UAS to perform these operations. The T-30 is utilized in agricultural spraying operations and provides a 30 liter tank/cannister to carry liquid. It is well suited for the operations provided by CropGuard and we expect the use of the UAS will maintain a high level of safety and security for the public and the environment.

Some of the noteworthy specs of the DJI Agras T-30 include Omnidirectional Radar, Remote Control Planning, Fixed Pesticide Tanks, Removable Batteries, Top View Radar Module, Front and Rearview FPV. The unit weighs 26.4kg without batteries and has a maximum take off weight of 76.5kg, which will exceed the weight limit as noted in Part 107. It has a maximum pitch angle of 15degrees and a maximum speed of 10 m/s. The drone was recently approved for use by the FAA in late 2021.We have attached a link to the specifications if there is a desire for more information regarding the DJI Agras T-30.

T30 - Specifications - DJI

The DJI Agras T-30 remote control is an RM-500- ENT and has an operating frequency of the Ocusync Industry Edition of 2.4000 – 2.4835 GHz and 5.725 – 5.850 GHz, which complies with the FCC requirements.

CropGuard currently employs one PIC. Jordan Olinger currently holds his 107 license and has flown UAS for multiple years. Jordan's current experience is with UAS Is a DJI Phantom 3Advanced and he has flown that unit for 2 years. Jordan has also flown a DJI Phantom 4 unit for one year. His experience with the T-30 is limited to flights during model selection at the dealer's office. Jordan is in excellent health and had a physical documenting that assertion. He eyesight requires no corrective lenses, which allows him to operate an UAS without limitations.

CropGuard will require all pilots to obtain their Part 107 license along with their Ohio Commercial Applicator license, which requires the user to follow certain application procedures when applying chemicals, thus increasing the safety of the public and the environment.

Pursuant to Title 14 Code of Federal Regulations (CFR) part 11.81 and Title 49 §44807, the undersigned respectfully petitions for exemptions from:

| Federal Aviation Regulation | Description |
|---|---|
| 61.3(a)(1)(i) | Requirements for certificates, ratings and authorizations |
| 91.7 | Civil Aircraft worthiness |
| 91.119 (c) | Minimum Safe Altitudes, General |
| 91.121 | Altimeter settings |
| 91.151(b) | Fuel requirements for flight in VFR conditions |
| 91.405(a) | Maintenance required |
| 91.407(a)(1) | Operation after maintenance, preventative maintenance, rebuilding or alteration |
| 91.409(a)(1) and (2) | Inspections |
| 91.417(a) and (b) | Maintenance records |
| 137.19 (c) and (d) and (e) (2)(ii)(iii) and (v) | Certification requirements |

| | |
|---|---|
| 137.31 | Aircraft requirements |
| 137.33 | Carrying of certificate |
| 137.41(c) | Personnel Pilot in Command |
| 137.42 | Fastening of safety belts and shoulder harnesses |
| | |

§61.3 – We are in the same position as many of our predecessors with this regulation. CropGuard believes the regulation is burdensome in the requirement of obtaining a license. CropGuard seeks an exemption and proposes allowing them to operate under CFR§91instead as noted in prior exemptions. CropGuard will require all pilots to obtain a Part 107 and Ohio Commercial Applicators license prior to the operation of any UAS. They will then utilize the skills developed through the flight operations and training manuals along with the airtime with the owner it ensures they have the skill set available to operate a commercial UAS. We believe the same level of safety anticipated in this regulation can be achieved via the flight and training manuals provided by CropGuard as well as the individualized training required for each pilot.

§91.7 - There are no airworthiness certificates for UAS at this moment. As such, CropGuard asks for an exemption to this regulation. As required in the manufacturers manual and the CropGuard expectations, a preflight inspection of the unit will be completed to ensure it is operational and poses no threat to the community or the airspace in which it will travel. We believe this will maintain a level of safety as outlined in the regulation.

§91.119(c) - CropGuard seeks an exemption from this regulation as it will routinely fly missions between 10 and 25 feet. This height allows the appropriate allocation of materials to specific locations. The UAS may fly up to a height of 100m as noted in the manufacturers manual, however CropGuard will never fly at this altitude unless forced to, due to obstacles, which would be identified in the preflight walk thru. CropGuard anticipates never flying the unit above 50-75 feet and that would only take place during return to home procedures. We believe the relatively low level will not impact the airspace as most flights will take place in remote locations and as such not impact the safety as anticipated in this regulation.

§91.121 - CropGuard requests an exemption to this regulation as the UAS does not allow for passengers. The UAS aircraft does have navigational performance monitored from a remote control located at the ground level location and as such has an onboard altimeter. CropGuard's PIC will continually monitor the remote control to determine location as well as altitude and ensure safety as outlined in this regulation. CropGuard will also use the onboard memory to review flights to ensure compliance with this regulation.

§91.151(b) – CropGuard seeks an exemption as the FAA has previously addressed this issue and determined the UAS could be operated safely using the manufacturer recommendations for power supply and excess power, which would meet all safety requirements. CropGuard will follow the manufacturer guidelines to ensure the appropriate amount of power is necessary for the trip as well as excess to ensure a safe return of the UAS. CropGuard will also ensure every battery is properly charged in the preflight walk through to ensure the power supply meets the FAA expectations. We believe this will address any safety issues as noted in this regulation.

§91.405(a)
§91.407(a)(1)
§91.409(a) (1) (2)
§91.417 (a) (b) - CropGuard asks for an exemption from these regulations as it is not feasible for a UAS to meet this as they do not have airworthiness certificates as anticipated in the regulation. CropGuard will meet the same level of safety standards by following the guidelines provide by the manufacturer to ensure a safe flight as well as a safe airspace. CropGuard will also complete visual inspections prior to flight for possible safety issues. They will also seek professional assistance in repairing any damaged parts and as such, will rely on their expertise to ensure safe operation for the public and environment.

§137.19 (c ) (d) (e ) (2) (ii) (iii) and (v) – CropGuard requests an exemption from §137.19(c) as the PIC will have the Part 107 License and adhere to those regulations when flying a UAS. This licensure requirement will ensure the skillset of every pilot operating a UAS for CropGuard. We believe this will attain the same level of safety as designed in the regulation.

They also seek an exemption for the 137.19(d) aircraft regulation as they will be utilizing a UAS for their flights, which have no airworthiness certificates. As noted in the portion discussing the DT-30, it has a history of success and safe operation to assure the FAA that safety will not be negatively impacted by this requested exemption.

CropGuard also requests an exemption of §137.19 (e) (2) (ii) (iii) and (v) as they will be utilizing an UAS. All pilots will be required to show proficiency in flight operations to the owner of CropGuard, which will include 20 hours under the supervision of the owner to ensure flight proficiency. All pilots will obtain the Part 107 license and also be required to follow the enclosed flight operations and training manuals. We believe this request for exemption will provide for a similar level of safety as anticipated in the regulation.

§137.31(b) – CropGuard requests an exemption as the Agras DJI T-30 is an UAS and as such does not come equipped with shoulder harnesses or seat belts. Since this unit

will have no pilots or passengers, we believe the request for exemption will not impact safety anticipated under this regulation.

§137.33(a)(b) - CropGuard seeks an exemption as they will be operating an UAS which does not allow for the carrying of a certificate. CropGuard will maintain the certificate at the base station during every flight. The Pilot in Charge will be responsible for providing the certificate as requested and required in our flight operations and training manuals. We believe that safety will not be impacted by this requested exemption.

§137.41(c) - CropGuard is asking for an exemption from this regulation. CropGuard will ensure all pilots have the Part 107 license and be required to follow both the flight operations and training manuals provided in our submission. This appears to have been exempted by the FAA multiple times in the past for UAS pilots. We believe this will provide the same level of safety as required in §137.41(c).

§137.42 - Please see our reasoning and request for exemption under §137.31(b).

Reasons Why Granting the Relief is in the Public Interest

1. Some people decide to apply fungicides using manpower. This exposes people to the airborne product at a higher capacity than what would be experienced by UAS application.
2. If a typical airplane applies the fungicide, foliar treatment, herbicide, seed, insecticide or possibly granules, there is a risk of the product being blown onto undesired locations. By using a UAS specific locations can be assured due to the height with which the product is applied.
3. New diseases are impacting our region, that can reduce yields of up to 30-40 bushels and decrease crop standability due to lodging. The use of an unmanned aircraft will help prevent the spread of this disease, by precisely applying the appropriate amount of chemicals to limit the spread of the disease.
4. Drones have much less impact on noise [pollution when compared to a manned aircraft. The typical drone will create less noise pollution, resulting in a reduced impact on the public as well as the environment.
5. Accidents with manned aircraft can possibly cause injuries to both the public and the environment. This risk is even higher in our area due to the propensity for smaller fields surrounded by hills or trees. The use of an unmanned unit will decrease and possibly eliminate the severity of injury to both the public and the environment.
6. We are also of the opinion that the unmanned aircraft will allow the right amount of fungicide to be placed in the exact location, therefore ensuring only the appropriate amount of chemicals are utilized thus helping to protect the

environment as well as reducing the costs to the consumer and ultimately improving yields.

7. The use of the drone will have a lower impact on the environment than your typical manned aircraft as it is powered by batteries. Today the farming industry emits more carbon that ever before and the use of the unmanned aircraft will help reduce that carbon footprint.
8. The use of the unmanned aircraft will help farmers to increase yields with fewer inputs allowing the reallocation of those inputs for the greater good of society.
9. The use of an unmanned aircraft will allow for improved observation of the product and its impact on the farmer and society. This ultimately will allow for information to the farmer to make decisions based on his specific property. These decisions will benefit the greater good of society by improving yields and crop health.

Why Granting the Relief does not Adversely Affect Safety

CropGuard will be flying a DJI AGRAS T-30 UAS. The unit comes with many safety systems with the focus on ensuring the public will not be adversely impacted by its operation. Our research indicates the T-30 has been the unmanned unit identified in multiple prior FAA requests for exemption. With this knowledge, we have simply identified the T-30's multiple safety systems and included links to the manufacturers website for further information surrounding the aircraft, which includes specifications and all safety options available.

Some of those safety systems are as follows:

Low Voltage and Battery Warnings, Obstacle Avoidance, Flight Limits and GeoFencing Zones, Failsafe Return to Home, Omnidirectional Digital Radar, and High Visibility Lighting.

DJI Agras T-30 Owners Manual

T30_User_Manual_v1.4_EN.pdf (djicdn.com)

DJI Agras T-30 Intelligent Flight Battery Users Guide

T30_T10_Intelligent_Flight_Battery_User_Guide_v1.2_10langs.pdf (djicdn.com)

DJI Agras T-30 Quick Start Guide

T30_Quick_Start_Guide_v1.2_8langs.pdf (djicdn.com)

Summary to be Published in the Federal Register

CropGuard is seeking exemption from the following rules as they, in many instances, were created for fixed wings aircraft as opposed to UAS we plan to utilize. We

understand the FAA is striving to achieve a safe airspace while adhering to the FAA Modernization and Reform Act thus our reason for requesting the exemptions. §61.3 (a)(1)(i), §91.7 (a), §91.119 (c), §91.121, §91.151(b),§91.403(b), §91.405(a), §91.407(a)(1), §91.409(a)(1)(2), §91.417(a)(b), §137.19(c)(d)(e)(2)(ii)(iii)(v), §137.31, §137.33, §137.41(c), §137.42.